

# The premature breech: caesarean section or trial of labour?

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## Authors' abstract

*Obstetricians face difficult decisions when the interests of fetus and mother conflict. An example is the problem of choosing the delivery method when labour begins prematurely and the fetus is breech. Vaginal delivery involves risks for the breech fetus of brain damage or death caused by umbilical cord compression and head entrapment. Caesarean section might avoid these dangers but involves risks for the mother, including infection, haemorrhage and even death in a small percentage of cases. If a caesarean section is performed the infant might die anyway, due to complications of prematurity. Thus, decisions about delivery method involve balancing the risks to mother and fetus. Uncertainty about the frequency of fetal injuries in vaginal breech deliveries adds to the difficulty of these decisions.*

Conflicts between the interests of fetus and mother arise in many situations in obstetrics (1,2,3). Technical advancements such as fetal monitoring, ultrasound, and amniocentesis have enhanced the ability of obstetricians to diagnose fetal disorders and recommend prompt delivery for the sake of the fetus. Advances in neonatal intensive care have greatly improved the survival of premature infants. As a result of these advances, obstetricians now regard the viable fetus as a patient, and future developments in fetal surgery are expected to strengthen this status. Thus, the problem of how to resolve conflicts between the interests of fetus and mother has emerged as a central ethical issue for obstetricians. In this paper we focus on one example of this issue: the problem of how to deliver the premature breech fetus.

When the fetus is in the breech position (feet or buttocks presenting) and premature labour cannot be stopped with drugs, a dilemma arises concerning whether to deliver the fetus by caesarean section or attempt a trial of labour. The latter approach involves an attempt to deliver vaginally, with the option of caesarean section if medical indications arise later

during labour. It is widely believed that prompt caesarean section results in a better outcome for premature breech fetuses, although this has never been shown by scientifically acceptable studies. It is thought that vaginal delivery of the small breech fetus creates an increased risk of brain damage due to hypoxia, brain haemorrhage and birth trauma. There are several reasons why these risks are believed to be greater for breech fetuses than those in the vertex (head-first) position. First, since the umbilicus passes through the cervix before the head, the umbilical cord is compressed between the head and cervix. Once compression begins, delivery must proceed without delay in order to avoid hypoxia. Second, the diameter of a fetus's head is greater than that of its chest and hips. Delivery of a breech fetus therefore carries a risk that the head will become trapped behind a cervix which is dilated enough to allow passage of the body but not the larger head. An entrapped head can result in hypoxia due to an inability to deliver the fetus. It can also produce trauma to the brain, spinal cord, or skeleton because of traction required to accomplish delivery. The risk of entrapment is greater for the premature fetus than the term fetus because the body is proportionately smaller in comparison to the head.

Although the risks of vaginal delivery can be avoided by caesarean section, the latter approach involves risks of maternal morbidity and mortality. Even though there were no maternal deaths following 10,231 caesarean sections at the Boston Hospital for women from 1968 to 1978 (4), such results do not appear typical. In another report, 10,501 caesarean sections resulted in nine maternal deaths (5). A study by Evrard and Gold revealed a death rate due to the caesarean section itself of 30.9 per 100,000 sections, in comparison to a death rate of 2.7 per 100,000 vaginal deliveries (6). Rubin, *et al*, found a mortality rate due to caesarean section of 59.3 per 100,000, compared to 9.7 per 100,000 for vaginal deliveries (7). These studies indicate a six to eleven-fold increased risk in caesarean section over vaginal delivery. Other possible complications of caesarean section include infection, haemorrhage, and injuries to the urinary tract. Rarely, a hysterectomy may be required to control uterine bleeding. Bowes and colleagues found significant maternal morbidity in 21 per cent of caesarean

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## Key words

Fetus; reproductive ethics; Labour and delivery; breech; caesarean section; maternal-fetal conflict.

sections, compared to 4 per cent of vaginal deliveries (8). The importance of avoiding these risks is underscored by concern over the rising caesarean section rate.

The choice of delivery methods is complicated by the risks of prematurity for the fetus. Respiratory distress is a major problem for premature infants, and respirator support is often a necessary life-saving measure. In spite of refinements in respirator therapy, death or chronic lung disease may occur. Intraventricular haemorrhage, which rarely occurs after 34 weeks gestation, is a major problem in the more premature infant. Intraventricular haemorrhage occurs when hypoxia causes necrosis of blood vessels in the brain, and it can result in brain damage or death. Premature fetuses are especially susceptible since their blood vessels are relatively fragile. Hypoxia can occur during labour, for instance by compression of the umbilical cord. It can also occur after birth, and premature infants are especially at risk due to their immature lungs. If a caesarean section is performed the infant may die in spite of the surgery, due to prematurity. In that event the woman will have been subjected to an operation yielding no benefit.

Another possibility is that a caesarean section will keep alive a seriously brain-damaged infant who would have died otherwise. The likelihood of this is increased by the fact that breech presentation is associated with a two to three-fold increase in congenital anomalies compared to vertex presentation. On the other hand, a vaginal delivery can result in brain damage or the death of an infant who would have been a healthy survivor if the more aggressive approach had been used. Regardless of the course of action one takes, unfortunate consequences are possible.

Not only is there disagreement concerning the best way to deal with such cases, but there is controversy over whether a prospective randomised study to resolve the issue would be ethical. This is an example of a problem which arises when there is evidence that one arm of a randomised clinical trial would have a more favourable balance of risks and benefits than the other arm, but the evidence is inconclusive. Since there is data supporting caesarean section, some may consider it unethical to randomise patients to trial of labour.

### **Patient participation**

Some might think that there is no dilemma for the obstetrician, since the mother has a right to autonomous decision-making. After all, the physician can explain the potential benefits and risks of each method of delivery to the mother and allow her to make the decision. However, in many cases patient autonomy does not provide such a straightforward solution, since factors are present which can interfere significantly with the patient's ability to take an active role in the decision. First, the affective states of the patient can interfere with informed consent. The patient in labour typically fears various things, including pain, death itself, and having a deformed

child (9,10,11). These fears and the pain of labour can interfere with the ability of the woman to assimilate information in some cases. In the type of situation we are considering, the woman has developed a sudden complication that might result in death or disability for her fetus. This can increase her fear that she will not have a healthy baby and heighten the degree to which affective factors impede the consent process.

Second, there is relatively little time to make a decision. In these situations labour is well under way. If a caesarean section is to be performed it must be done without great delay, since a vaginal delivery is otherwise expected. In our institution (Regional Medical Center at Memphis), for example, during 1979–1984 approximately 50 per cent of very premature infants delivered within seven hours of admission. The pressure of time not only reduces the period available for deliberation, but creates stress which can impede the patient's ability to make a decision.

Third, the socio-economic level of the patient can influence her ability to take an active role in the decision. The importance of this factor is due to the high percentage of premature breech cases which involve patients of low socio-economic status. Although premature birth may have various causes, contributing factors are believed to include the poor prenatal care and maternal nutrition associated with pregnancies of low socio-economic women. The effects of low socio-economic status upon informed consent in an obstetrical context were documented by Gray (12). He compared the level of comprehension of clinic patients to private middle-class patients following consent to participate in a labour induction study. It was found that 50 per cent of the clinic patients did not realise that they had been participating in research. In comparison, only 25 per cent of the private patients did not realise this. Among the clinic patients, 46.9 per cent did not know why they had been asked to participate in the study, while 17.6 per cent of the private patients did not know. In trying to account for the relatively poor comprehension by clinic patients, Gray noted that they tended not to ask the physician questions, in comparison to the private patients. He suggested that the wide gap in social status between clinic patients and physicians and the limited education of the patients may have inhibited the asking of questions. This suggests that women in lower socio-economic groups are likely to defer to their physicians rather than actively seek information and decide for themselves.

Each of the above factors is often present in cases involving a premature breech. Advance discussions can help prepare patients for these decisions, and should be encouraged. Nevertheless, patients who are anxious and uncertain will often look to the physician for advice. In such circumstances the physician must be prepared to make a recommendation about method of delivery. In addition, the patient will sometimes explicitly ask the physician to make the decision. In

these types of circumstances, the manner in which the obstetrician counsels the patient reflects a personal assessment of the likelihood and magnitude of harms to mother and fetus, as well as a valuation of those possible harms. Thus, although the right to make the decision rests primarily with the pregnant woman, the obstetrician unavoidably faces the problem of balancing the interests of fetus and mother.

### Review of available data

It is widely believed that the advantages of caesarean section for the premature breech fetus depend on birth weight and gestational age. However, the exact nature of such a relationship has not been established. There has been a reluctance, on ethical grounds, to conduct prospective randomised clinical trials concerning delivery of the premature breech. As a result, investigators have conducted retrospective studies (involving review of previous cases). Such studies have shortcomings in scientific design, compared to prospective studies. They assume that the control and study groups are equivalent with respect to all important variables except the treatment being investigated or that the data can be corrected for differences. However, the equivalence can always be questioned because of the possibility of bias in selection of subjects for inclusion in the study and assignment of treatment to subjects. Also, attempts to correct the data can be challenged since they assume that all variables affecting prognosis are known. Randomisation of prospective subjects eliminates bias in the selection of subjects and assignment of treatment, and it tends to provide study and control groups that are equivalent, regardless of whether the variables affecting prognosis are known. Thus, some doubt about the validity of results is always present with regard to retrospective studies. Moreover, some of the retrospective premature breech studies have had even more serious weaknesses in scientific design. For example, investigators have compared the results of vaginal breech and vaginal vertex deliveries (13,14). The appropriate comparison, however, is between breech fetuses selected for trial of labour and those delivered promptly by caesarean section. In some protocols the study and control groups have been drawn from different time periods (15,16). The difficulty with this approach is that differences in outcome might be due to improvements in perinatal and neonatal care. Various reports have been based on such small numbers of subjects, especially in the smaller birth-weight categories, that the differences or similarities reported were not statistically significant (14), (17,18,19). In other investigations there was a difference in the mean birth-weight of the vaginal delivery and caesarean section groups to such a degree that differences in outcome may be due to this factor (8). In some reports the mean birth-weights of the two groups were simply not stated, leaving open the possibility that differences were due to this factor (17), (20,21,22,23,24).

There are several studies which, although retrospective, appear to contain conclusions of sufficient scientific merit that we should take them into account. These studies are discussed below.

Duenhoeelter *et al* identified 44 matched pairs of patients based on records of breech fetuses weighing 1000–2499 grams delivered between 1972 and 1977 at Parkland Memorial Hospital in Dallas (25). The vaginal delivery and caesarean section groups were matched according to birth-weight, year of delivery, and maternal parity. Cases with complications thought to influence fetal outcome were excluded. The authors found that there were seven deaths in the vaginal group, in comparison to one death in the caesarean-section group. Furthermore, the caesarean-section death was clearly unrelated to the breech presentation. Twelve infants in the vaginal delivery group had five-minute Apgar scores less than seven, in comparison to four infants in the caesarean section group, a difference which was statistically significant. Five infants in the vaginal group developed intracranial haemorrhage, while none in the caesarean section group did, a difference which also was statistically significant. Based on these results the investigators concluded that delivery by caesarean section is preferable for fetuses weighing 1000–2499 grams.

A case-review of all breech infants weighing 750–1499 grams admitted to the St Louis Children's Hospital neonatal intensive care unit during the period of August 1978 to October 1981 was carried out by Main, Main, and Maurer (26). This yielded data on 123 infants delivered vaginally and 93 delivered by caesarean section for a variety of obstetric complications. The mortality rate for the former group was 58 per cent, compared to 29 per cent for the latter, a statistically significant result. Among infants with birth-weight 750–999 grams, there were 52 vaginal deliveries but only fifteen caesarean sections. Although the mortality rate was higher for the vaginal deliveries, the difference was not statistically significant, due to the small number of caesarean sections.

Olshan *et al* examined the records of all singleton infants weighing 700–1500 grams born during 1977–1979 at all hospitals performing obstetric services in King County, Washington (27). Of special interest are their findings concerning the effect of caesarean section on mortality rate for fetuses with noncephalic presentation, of which 79 per cent were breech. An adjusted risk of neonatal mortality was calculated by statistical methods aimed at controlling for the variables found to influence the effect of caesarean birth, which included place of delivery (tertiary perinatal center v community hospital) and birth-weight (700–1099 grams v 1100–1500 grams). Infants born with congenital abnormalities incompatible with life were excluded. No statistically significant difference was found between the mortality rates of those delivered vaginally and those delivered by caesarean section in the weight range of 700 to 1500 grams.

A review by de Crespigny and Pepperell was carried out for all breech infants delivered at the Royal Women's Hospital in Melbourne during 1974–1976 (28). Of particular interest are their results for infants with birth-weight greater than 2500 grams. In that group 149 infants were delivered by caesarean section for various obstetrical complications. Vaginal deliveries were accomplished for 331 infants for whom there were no medical reasons for caesarean section other than breech presentation. The perinatal mortality rate was very low for both categories: 0.7 per cent for the caesarean section group and 0.3 per cent for the vaginal group. In addition, there was no significant difference in either the one-minute or the five-minute Apgar scores of the two groups. The authors concluded that routine caesarean section for breech presentation for fetuses weighing more than 2500 grams is not justified.

Mann and Gallant reviewed all recent breech deliveries at the Medical Center Hospital of Vermont (29). Particularly noteworthy are their results for infants with birth-weight greater than 2000 grams. Among those cases, 125 caesarean sections were done for a variety of obstetric complications and 209 vaginal deliveries were carried out. There were no deaths in the vaginal group and, while there was one death in the caesarean-section group, it was unrelated to the breech presentation. This data supported the authors' conclusion that fetuses weighing 2000 grams or more need not be delivered routinely by caesarean section. Caution, however, suggests that this conclusion should not be applied to fetuses with a footling breech (at least one leg extended at the hips and one or both feet lowermost in the birth canal) presentation. Footling breech is reported to involve especially high risk in vaginal delivery, and the authors did not indicate the percentage of footling breech in the vaginal and caesarean-section groups with birth-weight greater than 2000 grams. It is possible, therefore, that most of the footling breeches were sectioned.

This review of the literature indicates that available data sometimes conflict. Nevertheless, the task is to decide upon a policy given the information that is available. We believe that the following assessment of the data is reasonable at present. First, the literature supports, on balance, the conclusion that routine caesarean section benefits breech fetuses weighing approximately 1000 to 2000 grams. Second, although one study suggests that the delivery method does not affect mortality for fetuses weighing less than 1000 grams (27), other studies yield conflicting results (8) and the effect on neurological outcome remains unknown. Therefore, the current data do not indicate that one delivery method is more likely to promote fetal interests than the other for this weight range. Third, the data do not support routine caesarean section as fetuses approach maturity. This conclusion regarding the relatively larger fetus is consistent with the available data concerning a related topic: delivery of the mature breech fetus. A number of studies focusing

on breech fetuses at term have supported the view that trial of labour is reasonable in some cases (30,31,32,33,34,35). Generally, these studies advocate selection of patients for trial of labour based on criteria that exclude those for whom complications are more likely to occur. For term fetuses, relevant considerations include the following: estimated fetal weight; measurements of pelvic size using X-rays or computed tomography; extension (degree of tilt) of the fetal head; type of breech presentation, and experience of the obstetrician in breech delivery. We shall not discuss approaches to delivering the mature fetus, since that is beyond the scope of the present paper.

## Discussion

Our position on the ethical issues is based on the literature review and takes account of the effects of birth-weight on prognosis. When the estimated fetal weight is approximately 1000–2000 grams, which normally corresponds to gestational ages of about 28 to 34 weeks, the obstetrician should, as in all cases, attempt to explain the pros and cons to the patient and give her the opportunity to make the decision. If she asks for a recommendation, we believe the physician should recommend caesarean delivery since current data suggest that it promotes the best interests of the fetus in this weight range. If the patient asks the physician to decide, we would advocate a choice for caesarean section.

Defending this view brings us to a central issue – the relative weights of the interests of fetus and mother. We shall argue that fetuses in the weight range in question should be regarded as having the full status of persons. In other words, mother and fetus have equal moral standing. Assuming equal moral status, there is no objective basis for the physician to give priority to one rather than the other. It might be argued that the physician should choose the alternative likely to produce the lesser overall harm. Unfortunately, this approach requires knowledge of the probabilities of various outcomes and this information is not presently available. Given an equal moral status, it is preferable to recommend caesarean section because the mother has the capacity knowingly to subject herself to risk. It is ethically justifiable to allow people knowingly to expose themselves to risk and sacrifice, within limits, in order to benefit or prevent harm to others. If caesarean section is performed and the risks to the mother materialise, that would be harm resulting from risks to which the individual consented. On the other hand, if vaginal delivery occurs and the risks to the fetus materialise, that would be harm due to exposure to risk by others rather than voluntary assumption of risk. Even though the harm is undesirable in either case, the former situation would be morally preferable. Additional support for this approach is provided by the fact that the mother usually is emotionally attached to the fetus, so that her interests are promoted in doing what is best for the fetus.

It might be objected that the voluntariness of the woman's agreement to subject herself to risk is questionable, given the powerful influence of the physician as authority figure and the other impediments to informed consent discussed above. In reply, we suggest that our argument has merit even if the quality of the consent is reduced by these impediments, as long as it is not so diminished that consent is invalid. The objection underscores the importance of helping the patient make as informed and voluntary a decision as feasible in the circumstances.

In defending the view that fetuses in the weight range in question should be regarded as having the moral status of persons, we begin with the observation that newborn infants are, and should be, accorded full moral status in our society. Moreover, there appears to be no morally relevant difference between newborns and fetuses in this weight range. Two sorts of considerations might be put forward in arguing that fetuses have a different moral status from newborns. First, differences in development might be put forward as morally relevant. Thus, Becker argues that a fetus gains moral status when it acquires the basic physical structure typical of human beings (36). That structure is achieved, on his view, when (i) the organism has assumed its basic gross anatomical form, normal or not (by which is meant its basic skeletal structure, musculature, arrangement of organ masses, and distribution of tissues) and (ii) the organism's inventory, normal or not, of histologically differentiated organs is complete. This basic structure is present, he suggests, some time after the sixth month of gestation. Another developmental view is advocated by Sumner, who argues that a fetus gains moral standing when it acquires sentience – the capacity for feeling or affect (37). He suggests that this occurs some time during the second trimester. Brody, on the other hand, claims that the crucial event is the beginning of brain activity, as measured by electroencephalographic waves (38). He claims that this occurs at about six weeks gestational age. We need not consider the ethical correctness of these views. For our purpose, it is sufficient to point out that the various milestones in development that might mark the onset of moral standing have been achieved for fetuses in the gestational age range we are discussing. Thus, such milestones do not distinguish newborns from these fetuses.

Second, it can be argued that birth is followed by social interactions that make the infant's moral status significantly different from the fetus's. As Englehardt points out, a newborn infant assumes the social role 'child' (39). Its needs elicit responses by mother or other caregivers to provide food, warmth, and other care. The social matrix of interactions between infant and others includes obligations of parents and caregivers towards the child. Despite an infant's lack of rational capacities, moral standing is thus conferred upon a child because of its role in this social structure.

Fletcher identifies three features of infancy that contribute to these social interactions (40). First, the separate physical existence of the infant, apart from the mother, confronts parents and health providers with independent moral claims for care and support. Second, diseases are more amenable to treatment and palliation after birth, since the number of diagnostic tests and therapeutic manoeuvres that are feasible is much greater. Third, parental acceptance of the infant as a real person is more developed after birth than in earlier stages of pregnancy.

Although their social role distinguishes infants from fetuses in very early periods of gestation, there are several reasons suggesting that birth does not constitute a sharp dividing line between those with and those without moral standing. First, infants are born at different ages of gestation. The idea that a premature infant at 24 weeks gestational age is a person, while a mature fetus *in utero* at 40 weeks is not, appears at odds with our moral intuitions. Second, the acquiring of the social role in question is a process that occurs over time, beginning prior to birth. We have new knowledge that pregnant women can act in ways that are promotive or detrimental to fetal health. A mother can attend to the needs of her fetus by avoiding excessive alcohol consumption and smoking, by eating nutritious meals, and by seeking treatment for medical problems of her own that can adversely affect the fetus, such as hypertension and diabetes. Moreover, advances in obstetric technology have increased our ability to interact with the fetus *in utero*. Obstetricians can monitor the health of the fetus and institute treatment or early delivery when needed. Also, the psychological attachment of parents to their fetus can be strong prior to birth. For these reasons, it seems arbitrary to denote birth as the onset of moral standing. In view of these considerations, perhaps it would be more appropriate – for those who consider social interaction to be a determinant of moral standing – to say that having the capacity to fill the social role of child, rather than actually filling it, marks the onset of moral standing. On this view, the viable fetus is considered to have the moral status of persons. In fact, Englehardt and Fletcher state that personhood status should be conferred upon viable fetuses. Again, we do not need to address here the correctness of such a view. It is sufficient to point out that social interaction does not provide a moral distinction between fetuses weighing 1000–2000 grams and infants.

Since there is evidence that caesarean section benefits the fetus weighing 1000 to 2000 grams, we would question the ethics of a randomised clinical trial involving fetuses in this weight range. The principle 'Do no harm' might be violated with regard to fetuses randomised to trial of labour. Another concern is randomising women to a less favourable arm in situations in which there are impediments to informed consent. The evidence suggests that the trial-of-labour arm would have a less favourable balance of risks and benefits for women who want to do what is best for

their fetus. A higher degree of competence to give consent should be required when patients take risks for the sake of research, compared to situations in which patients consent to therapy having a favourable balance of benefits and risks.

For fetuses weighing less than 1000 grams, the survival rate decreases with birth-weight and gestational age. Recent reports indicate that the survival rate at 25 weeks gestational age is in the range of 11–38 per cent and at 24 weeks it is 9–36 per cent (41,42,43,44). Survival rates have also been tabulated by birth-weight. At our hospital during 1983–1984 the survival rate was 11.8 per cent for infants weighing less than 600 grams at birth. Goldenberg and colleagues reported a survival rate of 5 per cent for infants between 600 and 700 grams (44). As the survival rate becomes very low, several considerations support the view that it would be wrong to recommend caesarean section. First, the benefits to the fetus of caesarean section are unproven. Second, since the infant will probably die, it is likely that the mother will have been subjected to a surgical procedure yielding no benefit. Third, the moral status of the fetus is less clear at the borderline of viability than it is near term. One might ask how low the survival rate must be in order for a recommendation for caesarean section (in the absence of maternal preference) to be unwarranted. There appears to be no clear answer to this question, but we would say this much: when the survival rate is approximately 10 per cent or less, we believe most people would agree that it would not be appropriate to recommend caesarean section. Thus, at our own institution we would surely advise against caesarean section if the estimated birth-weight were less than 600 grams. The weight 600 grams is not a fixed guidepost, however, since survival rates vary from one hospital to the next and may improve over time. Until recently, a limit as low as 600 grams would not have been appropriate at our institution. Prior to 1983 the survival rate was below 10 per cent for infants weighing 650–699 grams. During 1983–1984, however, the survival rates increased to 24 per cent and 34 per cent for infants weighing 600–649 and 650–699 grams, respectively. We recognise, also, that such rules of thumb based on survival rates might not be helpful at institutions where in-house survival data is not available. Some hospitals have too few deliveries of very premature infants to accumulate meaningful data concerning their own experience.

When the fetus has a higher probability of survival and weighs less than 1000 grams, two opposing philosophies may be encountered among obstetricians. An aggressive approach would favour the operative procedure to prevent fetal harm due to head entrapment. A conservative view, favouring vaginal delivery, may be based on a concern that the aggressive approach would result in sectioning many women unnecessarily. It is difficult to show that there is a 'right answer' concerning this issue. If the mother does not have a preference, then a recommendation for

either method of delivery would appear to be reasonable. Also, a randomised study would be ethically acceptable in such cases. Gestational ages below approximately 26 weeks should be excluded because the low survival rate might cause some women to regard the balance of risks and benefits of caesarean section to be unfavourable compared to vaginal delivery. Again, one would have a randomised trial in which one arm is relatively unfavourable and there are impediments to informed consent. Thus, an ethical protocol might only apply to fetuses at about 26–27 weeks gestational age. Unfortunately, the length of time required at a single institution to enlist enough subjects for a meaningful study would discourage research on this topic. Moreover, one could question the ethics of a study involving too few subjects for statistically meaningful results. A multicentre study, however, might be feasible.

In conclusion, breech presentation of the premature fetus creates a difficult situation involving conflict between the interests of the fetus and mother. Although the right to make the decision rests primarily with the pregnant woman, obstetricians have a responsibility to make recommendations when appropriate, and sometimes they are asked to make the decision. Our review of the literature suggests a conceptual framework for the obstetrician involving three types of cases. First, when the estimated fetal weight is approximately 1000 to 2000 grams, caesarean section appears to be in the fetus's interests. We argued that caesarean section should be recommended in these cases. Second, for smaller fetuses (approximately 600–1000 grams) there is genuine controversy due to uncertainty concerning the usefulness of caesarean delivery. Either method of delivery would be ethically justifiable. Third, for the most premature fetuses (less than approximately 600 grams) the survival rate is too low to justify a recommendation for caesarean section. No doubt there will continue to be controversy concerning this issue. We believe, however, that a careful review of the current data supports the approach we have outlined. This approach, of course, is subject to revision in response to future data.

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